Attorney Docket No. 960716RE/TL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor : S. TATSUTA

Reissue Application for Patent No. : 5,943,448

Issued : August 24, 1999

Express Mail Mailing Label No.: EL 767 484 295 US

Date of Deposit: May 9, 2001

I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

Stephen D. Stout

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In the event that this Paper is late filed, and the necessary petition for extension of time is not filed concurrently herewith, please consider this as a Petition for the requisite extension of time, and to the extent not tendered by check attached hereto, authorization to charge the extension fee, or any other fee required in connection with this Paper, to Account No. 06-1378.

STATEMENT OF STATUS/SUPPORT FOR ALL CHANGES TO THE CLAIMS UNDER 37 CFR 1.173(c)

Assistant Commissioner for Patents
Washington, D.C. 20231

S I R :

All the patent claims 1-24 are pending. New claims 25-29 have been added in a Preliminary Amendment filed concurrently herewith. These are also pending.

Claim 1

The limitation "desired dot code" has no basis in the written description and therefore, the word "desired" is being deleted. This serves to clarify the claim.

The feature of a "code reading means" is supplemented by the phrase --to provide an image signal corresponding to an image formed from said dot code that has been read--. This is supported in the disclosure at col. 14, lines 31-36.

The "binarizing means" is clarified by replacing "an" with --said-- to refer to the antecedent established for "image signal". Also, the superfluous phrase "corresponding to the dot code read by said code reading means" is eliminated.

The "information reproducing means" is clarified by modifying the phrase "binarized data" to --said binarized data-- to refer to the antecedent established therefor. The feature "original multimedia information" is clarified by changing it to --the multimedia information--. The replacement of "to reproduce" with --and for reproducing-- is grammatical.

The revision of the "reference dot detection means" is supported in the disclosure at col. 15, lines 34-38. It is also supported at col. 14, lines 53-58, as amended herein.

The "dot area measuring means" is modified to change "the area of the reference dot" to --an area of the reference dot-- because it has no antecedent basis.

The "threshold value modifying means" is clarified with wording supported at col. 14, lines 62-66.

The newly added last paragraph of the claim is supported at col. 14, line 66 to col. 15, line 3.

Claim 2

This modification is grammatical to clarify the meaning of "read by said reading means in one of field and frame units". It is supported at col. 15, lines 30-32.

Claim 3

The change made to the "code reading means" conforms it to the changes made to claim 1, and is supported at col. 14, lines 31-36.

The revised "binarizing means" is supported at col. 16, lines 20-39.

Claim 5

The change made to claim 5 is formal so that an antecedent is referred to appropriately.

Claim 7

The changes made are formal (referring to an antecedent) and grammatical. Support is found at col. 19, lines 13-19.

Claim 8

The change is grammatical. Support is found at col. 19, lines 38-68.

Claim 9

The changes are grammatical and clarify the arrangement of the claimed features. Support is provided at col. 20, line 33 to col. 21, line 9.

Claim 10

The changes clarify the claim and are supported at col. 21, lines 50-59.

Claim 11

The changed, clarified claim is supported at col. 22, lines 50-59.

Claim 12

The changed, clarified claim is supported at col. 23, lines 53-63.

Claim 13

The changed, clarified claim is supported at col. 24, lines 58-65.

Claim 16

The changed, clarified claim is supported at col. 26, lines 37-47.

Claim 19

The changed, clarified claim is supported at col. 28, lines 18-62.

Claim 20

The changed, clarified claim is supported at col. 28, line 63 to col. 29, line 33.

Claim 21

The changed, clarified claim is supported at col. 14, lines 49-66.

Claim 22

The claim is supported at col. 19, lines 8-12 and col. 20, lines 55-56.

Claim 24

The changed, clarified claim is supported at col. 45, lines 45-58.

Claim 25

This new claim is supported at col. 15, lines 30-41.

Claim 26

This new claim is supported at col. 14, lines 29-48.

Claim 27

This new claim is supported at col. 14, lines 49-66.

Claims 28 and 29

These new claims are supported at col. 16, line 66.

Respectfully submitted,

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PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Attn: BOX REISSUE

S I R :

IN THE SPECIFICATION:

Please amend the specification as follows.

Replace the paragraph extending from col. 14, line 49 to col. 15, line 3 with the following:

--The binarizing section 14 according to the first embodiment, as shown in FIG. 4B, comprises a reference dot detection section 14A, a dot area measuring section 14B, a threshold value modifying section 14C and a threshold value determining section 14D. The [reference dot detection section 14A] threshold value determining section 14D, prior to generating binarized data to be supplied to the information reproducing section 16, binarizes an image signal supplied from the code reading section 10 with a predetermined threshold value, and then

the reference dot detection section 14A detects a reference dot from the binarized code information. As the reference dot to be described later, for example, a pattern dot 278 may be employed. The dot area measuring section 14B measures the area of the reference dot detected by a reference dot detection section 14A. The threshold value modifying section 14C modifies the threshold value for use in the binarizing process in such a manner that the area measured by the dot area measuring section 14B approaches a predetermined target value. The threshold value determining section 14D binarizes the image signal with the threshold value modified by the threshold value modifying section 14C, and then transmits the obtained binarized data to the information reproducing section 16.--

Please amend claims 1-3, 5, 7-13, 16, 19-22 and 24, and add claims 25-29, as follows:

1. (Amended) An information reproducing system comprising:

code reading means for reading a [desired] dot code from an information recording medium on which multimedia information including at least any one of audio information, image information and digital code data has been recorded in the form of a dot code which can optically be read, to provide an image signal corresponding to an image formed from said dot code that has been read;

binarizing means for generating binarized data from [an] said image signal [corresponding to the dot code read by said code reading means]; and

information reproducing means for restoring said binarized data generated by said binarizing means to [original] the multimedia information [to reproduce] and for reproducing the multimedia information, wherein

said binarizing means includes:

reference dot detection means [which binarizes the image signal with a predetermined threshold value prior to generating binarized data so as to detect] for detecting a reference dot from [the] said binarized [code image] data by use of a predetermined threshold value;

dot area measuring means for measuring [the] an area of the reference dot detected by said reference dot detection means; and

threshold value modifying means for [modifying the] obtaining a modified threshold value derived in such a manner that the area measured by said dot area measuring means approaches a predetermined target value[;and],

[threshold value determining means for binarizing the image signal with the threshold value modified by said threshold value modifying means.]

wherein said binarizing means generates said binarized data from said image signal based on said modified threshold value.

2. (Amended) An information reproducing system according to claim 1, wherein said binarizing means binarizes the image signal formed from said dot code that has been read by said code reading means in [one of field and frame] units of one field or units of one frame.

3. (Amended) An information reproducing system according to claim 1, wherein

said code reading means successively reads [the code image] said dot code, and

said binarizing means [modifies the threshold value of the successive image signals read by said reading means in one of the previous field and previous frame in accordance with the area of the detected reference dot so as to binarize the one of the present field and present frame with] detects, with said reference dot detection means, the reference dot from binarized data generated from a particular image signal corresponding to an image formed from said dot code of an immediately preceding field or frame, said particular image signal having been binarized based on said predetermined threshold value, and wherein said binarizing means further measures the area of said reference dot to obtain an area measurement, modifies the predetermined threshold value, with said threshold value modifying means, based

on said area measurement, to derive said modified threshold value, and binarizes a current field or frame based on the modified threshold value.

5. (Amended) An information reproducing system according to claim 1, wherein the dot code recorded on said information recording medium includes a data code corresponding to the multimedia information and a pattern code for determining the position at which the data code is read, and

the reference dot is at least a portion of the pattern code.

7. (Amended) An information reproducing system according to claim 1, wherein

said reference dot detection means detects a plurality of said reference dots; and

said dot area measuring means has average area calculating means for calculating [the] an average area from areas of the detected [plural] plurality of said reference dots.

8. (Amended) An information reproducing system according to claim 7, wherein

said dot area measuring means has dot selection means for inhibiting input of the area of the reference dot into said average area calculating means in a case where the measured area

of each reference dot is [larger than] outside of a predetermined range.

9. (Amended) An information reproducing system according to claim 1, wherein

said threshold value modifying means has threshold value holding means for (i) counting the number of reference dots detected by said reference dot detection means, [determines] (ii) determining whether or not the counted number of the reference dots satisfies a predetermined number and [inhibits] (iii) inhibiting modification of the threshold value in a case where the counted number of reference dots is less than the predetermined number.

10. (Amended) An information reproducing system according to claim 1, wherein

said threshold value modifying means includes;

peak value detection means for detecting [the] a maximum value and [the] a minimum value of [the] a luminance from a [predetermined] detection region defined on the image formed from the dot code read by said code reading means;

interior division ratio modifying means for modifying [the] an interior division ratio in accordance with [the] an amount of modification of the interior division ratio calculated from [the] a difference between the area measured by said dot area measuring

means and the predetermined target value; and

threshold value calculating means [which divides the value] for multiplying a difference between the maximum and minimum values detected by said peak value detection means with the interior division ratio modified by said interior division ratio modifying means and adding the minimum value so as to [calculate the] obtain said modified threshold value.

11. (Amended) An information reproducing system according to claim 10, wherein said peak value detection means [interrupts following processes for] terminates subsequent processing of the image signal for a [subject] current frame in one of a case where the detected minimum value is larger than a predetermined first threshold value and a case where the detected maximum value is smaller than a predetermined second threshold value.

12. (Amended) An information reproducing system according to claim 10, wherein said peak value detection means has selective average calculating means for calculating [the] an absolute value of [the] a difference between luminance values of pixels that are positioned adjacent to a pixel of interest and for calculating [the] an average value of the luminance values of adjacent pixels only when [a result of the calculation] said absolute value is smaller than a predetermined threshold value

[so that], wherein said peak value detection means thereby detects the peak values [are detected] from the calculated average value of the [calculated] luminance values.

13. (Amended) An information reproducing system according to claim 10, wherein said interior division ratio modifying means has an interior division ratio modification amount table for determining [the] an amount of modification of the interior division ratio in accordance with [the] a relationship between dot area S and target value S_t [so as to determine] and determines an amount Δk of modification of the interior division ratio from the measured dot area and the predetermined target value in accordance with said interior division ratio modification amount table.

16. (Amended) An information reproducing system according to claim 10, wherein said interior division ratio modifying means changes the interior division ratio in a stepped manner and [provides] allows an interior division ratio modifying operation to have a hysteresis characteristic.

19. (Amended) An information reproducing system according to claim 10, wherein

said code reading means successively reads [the code images] said dot code,

said interior division ratio modifying means modifies the interior division ratio to one of a field and a frame which satisfies a predetermined condition for the successive image signals formed from said dot code read by said code reading means and holds the modified interior division ratio for one of the following field and frame.

20. (Amended) An information reproducing system according to claim 1, wherein

the dot code recorded on said information recording medium has an attitude dot disposed in a predetermined [region] area adjacent to [the] a reading start end and including information about said information recording medium for determining the threshold value required by said binarizing means, and

said binarizing means includes:

attitude dot detection means for detecting the attitude dot;

attitude reading means [which binarizes the image signals read by said reading means in one of field and frame units so as to read] for reading information relating said information recording medium from the attitude dot [of said binarized image] detected by said attitude dot detection means in the image signal formed from the dot code read by said code reading means and binarized based on the threshold value determined in accordance with said attitude dot; and

attitude storage means for storing information read by said

attitude reading means and applying information to each of following images.

21. (Amended) An information recording medium for use in an information reproducing system having code reading means for reading a [desired] dot code from an information recording medium on which multimedia information including at least any one of audio information, image information and digital code data has been recorded in the form of a dot code which can optically be read; binarizing means for generating binarized data from an image signal corresponding to the dot code read by said code reading means; and information reproducing means for restoring binarized data generated by said binarizing means to original multimedia information to reproduce multimedia information, said information recording medium comprising:

data dots which correspond to [the] contents of <u>the</u> multimedia information and which can optically be read; and

a reference dot arranged to be [detected] <u>binarized</u> by said binarizing means and serving as a reference when the threshold value is modified to allow the area of the [detected] <u>binarized</u> dot to approach a predetermined target value.

22. (Amended) An information recording medium according to claim 21, wherein a plurality of the reference dots are recorded [in an image pickup region] <u>on the information recording medium</u>

in such a manner that said plurality of the reference dots can be detected in an image pickup area of the code reading means when the code reading means reads the dot code from the image pickup area.

24. (Amended) An information recording apparatus for recording multimedia information including at least any one of audio information, image information and digital code data in the form of a dot code which can optically be read, comprising:

input means for inputting information relating to said information recording medium;

storage means for storing [the] a predetermined relationship between the information relating to [a predetermined] the information recording medium and one of [the] an area of the dot [when data is recorded] and [the] a recording density when data is recorded; and

recording means for reading a corresponding one of the dot area and the recording density from said storage means in accordance with the information that relates to said information recording medium and which has been input by said input means [and relating to said information recording medium so as] to thereby record a dot code corresponding to multimedia information in accordance with the one of the dot area and the recording density.

25. An information reproducing system according to claim 1, wherein

said code reading means successively reads said dot code, and

said binarizing means detects, with said reference dot detection means, the reference dot from binarized data generated from a particular image signal corresponding to an image formed from said dot code of a current field or frame, said particular image signal having been binarized based on said predetermined threshold value, and wherein said binarizing means further measures the area of said reference dot to obtain an area measurement, modifies the predetermined threshold value, with said threshold value modifying means, based on said area measurement, to derive said modified threshold value, and binarizes the current field or frame based on the modified threshold value.

26. An information reproducing system comprising:

code reading means for reading a dot code from an information recording medium on which multimedia information including at least any one of audio information, image information and digital code data has been recorded in the form of a dot code which can optically be read, to provide an image signal corresponding to an image formed from said dot code that

has been read;

binarizing means for generating binarized data from said image signal by use of a threshold value; and

information reproducing means for restoring said binarized data generated by said binarizing means to the multimedia information and for reproducing the multimedia information;

wherein said binarizing means modifies the threshold value based on a measurement of an area of a predetermined dot obtained from the binarized data generated from said image signal.

27. An information recording medium for use in an information reproducing system comprising:

code reading means for reading a dot code from an information recording medium on which multimedia information including at least any one of audio information, image information and digital code data has been recorded in the form of a dot code which can optically be read;

binarizing means for generating binarized data, by use of a predetermined threshold value, from an image signal corresponding to an image of the dot code read by said code reading means; and

information reproducing means for restoring binarized data generated by said binarizing means to the multimedia information and for reproducing the multimedia information, said information recording medium comprising:

data dots which correspond to contents of

the multimedia information and which can optically be read; and

a reference dot used when said binarizing means binarizes the image signal and modifies the predetermined threshold value so that an area of the reference dot in an image of the dot code read by said code reading means approaches a predetermined target value.

28. An information reproducing system according to claim 27, wherein said reference dot is an isolated dot.

29. An information reproducing system according to claim 21, wherein said reference dot is an isolated dot.

R E M A R K S

The modifications made herein to this written description are to correct a clear error, as explained in the Reissue Declaration filed concurrently herewith. No new matter is involved.

Entry of the Preliminary Amendment, allowance of the claims, and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

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LETTER TO THE OFFICIAL DRAFTSPERSON

Assistant Commissioner for Patents
Washington, D.C. 20231

S I R :

Fig. 29 has been amended as shown in red on the drawing enclosed herewith. The "YES" and "NO" labels have been exchanged to conform with the written description at col. 22, lines 20 to 33. No new matter is involved.

A formal replacement drawing is also enclosed.

Approval by the Examiner and the Official Draftsperson is respectfully solicited.

Respectfully submitted,

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TL:sds

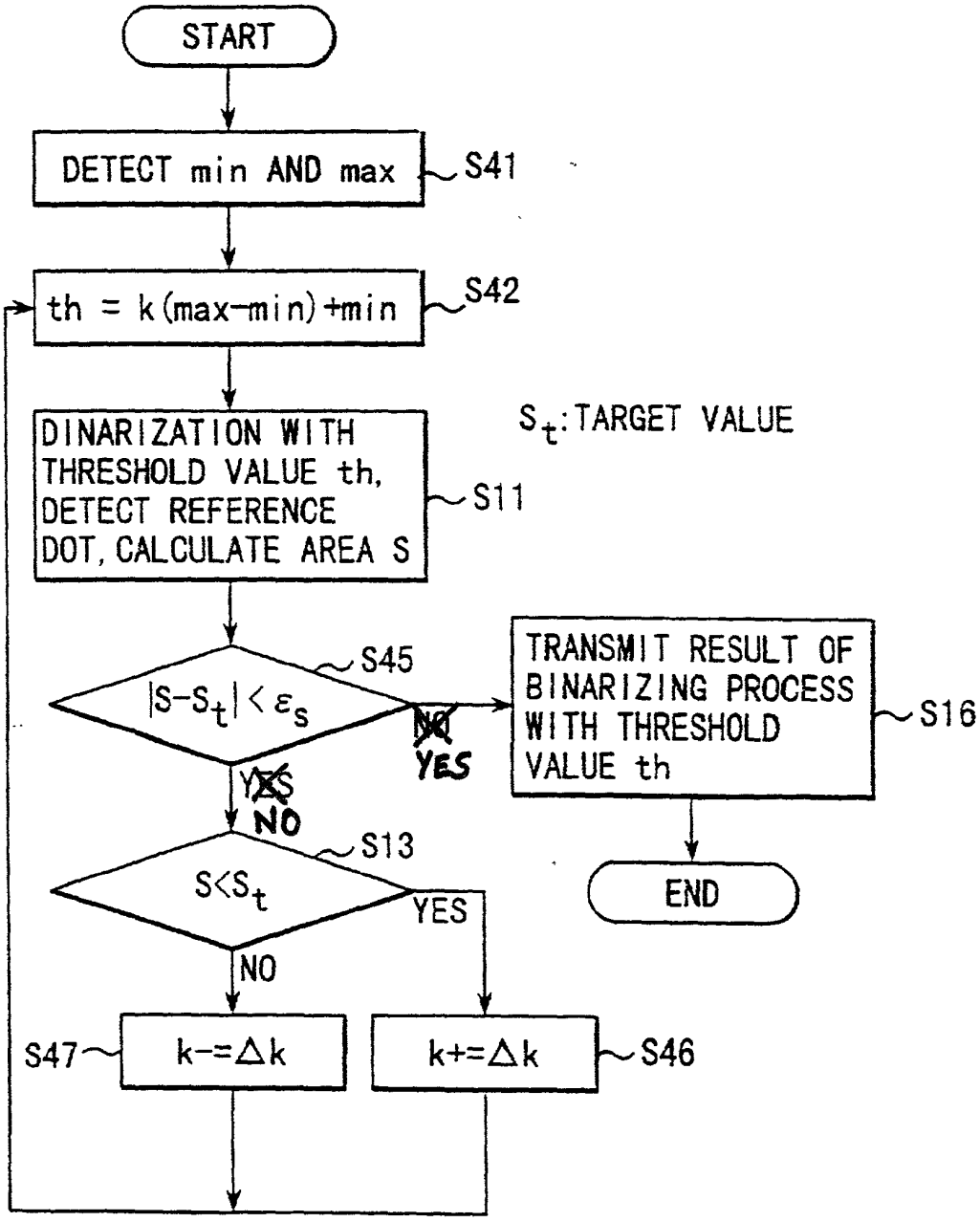
START
DETECT min AND max
S41
th = k(max-min)+min
S42
DINARIZATION WITH THRESHOLD VALUE th, DETECT REFERENCE DOT, CALCULATE AREA S
S11
S_t:TARGET VALUE
S45
$|S-S_t| < \varepsilon_s$
NO
YES
YES
NO
TRANSMIT RESULT OF BINARIZING PROCESS WITH THRESHOLD VALUE th
S16
END
S13
$S<S_t$
YES
NO
S47
k-=Δk
k+=Δk
S46

FIG. 29

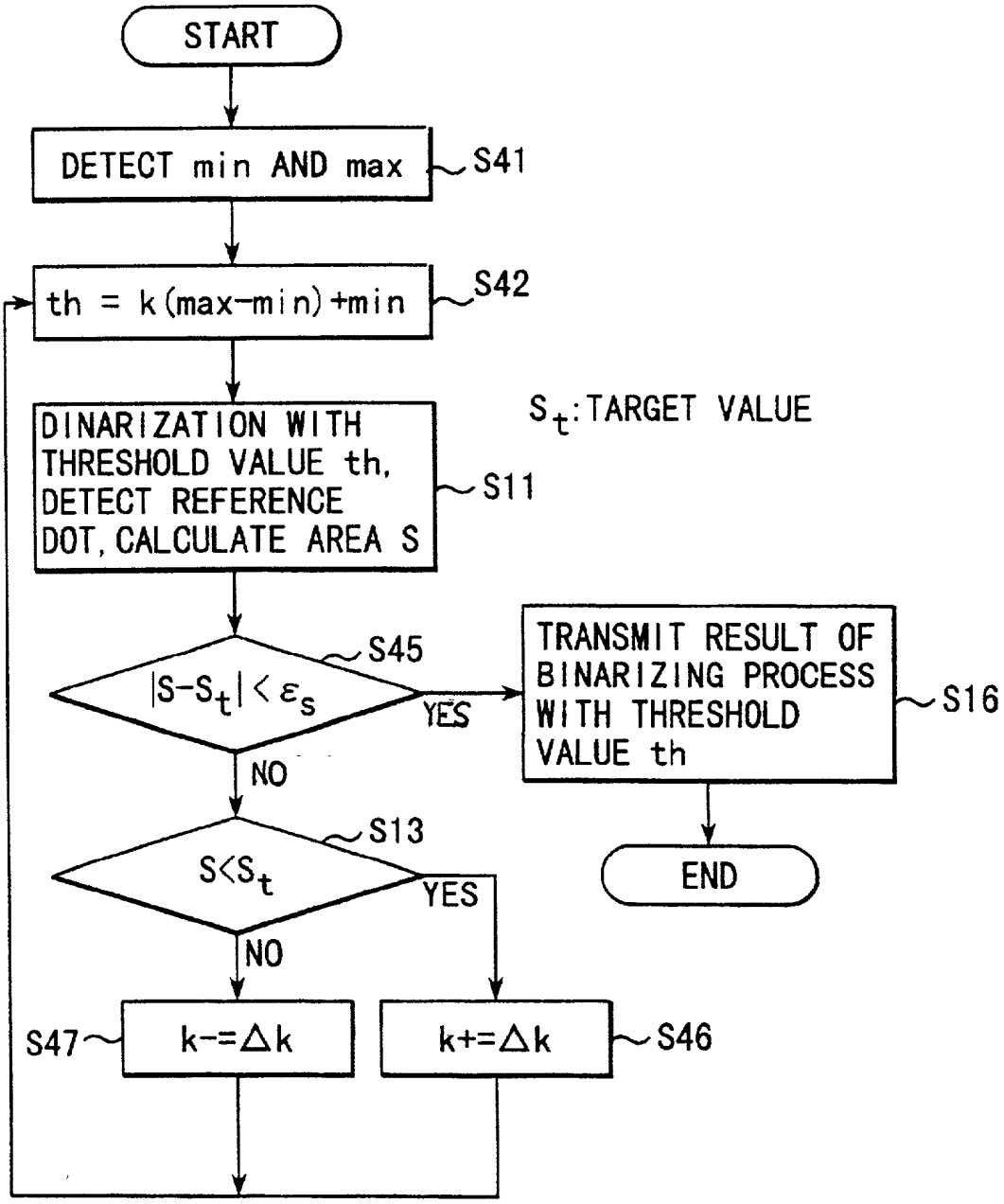

FIG. 29

Copy provided by PTCS from the PTO APS Image Data Base on 09-15-1999